AMENDMENTS TO CLAIMS

The claims have not been amended; however, Applicant has provided a listing of the claims for Examiner's reference. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Original) A gauge for transmitting acoustic signals through a pipe to a receiver, the gauge comprising:

an acoustic wave generator;

a coupler mechanically connected to the acoustic wave generator, wherein the coupler is engageable and disengageable with the pipe, wherein the coupler defines an acoustic transmission path between the acoustic wave generator and the pipe when engaged with the pipe; and

a signal controller in communication with the acoustic wave generator, wherein the gauge is insertable into the inside diameter of the pipe.

2. (Original) A gauge as claimed in claim 1, wherein the acoustic wave generator comprises a piezoelectric crystal.

3. (Original) A gauge as claimed in claim 1, wherein the acoustic wave generator comprises a piezo wafer.

4. (Original) A gauge as claimed in claim 1, wherein the acoustic wave generator comprises a magneto-restrictive material.

5. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

a slip comprising a production pipe engaging surface; and

a wedge comprising a tapered surface in sliding contact with the slip, whereby the wedge forces the slip into engagement with the production pipe as the wedge slides relative to the slip.

6. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

a sub extending along the longitudinal central axis of the gauge;

a cone attached concentrically to the sub;

a connector ring slidingly mounted to the sub; and

at least one slip mounted in a recess of the connector ring,

wherein relative movement of the cone and connector ring causes the cone to push the at least one slip in a radial-outward direction.

7. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

a first set of slips positioned at one end of the acoustic wave generator;

a second set of slips positioned at an opposite end of the acoustic wave generator;

a setting mechanism mechanically connected to the first and second sets of slips, wherein the setting mechanism acoustically couples the acoustic wave generator to the first and second sets of slips when the setting mechanism sets the slips.

8. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

an upper sub extending along the longitudinal central axis of the gauge;

an upper cone attached concentrically to the upper sub;

an upper connector ring slidingly mounted to the upper sub;

at least one upper slip mounted in a recess of the upper connector ring;

a lower sub extending along the longitudinal central axis of the gauge;

a lower cone slidingly mounted to the lower sub;

a lower connector ring attached to the lower sub;

at least one lower slip mounted in a recess of the lower connector ring,

an outer sleeve in mechanical communication with the lower cone

wherein relative movement of the upper sub and the outer sleeve causes the at least one upper slip and the at least one lower slip to move radially outward and causes the upper sub and the lower sub to be pushed toward each other.

9. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

a first set of slips mechanically connected to the acoustic wave generator;

a second set of slips mechanically connected to the acoustic wave generator;

a setting mechanism mechanically connected to the first and second sets of slips,

wherein the setting mechanism sets the first set of slips before it sets the second set of slips.

10. (Original) A gauge as claimed in claim 1, wherein the coupler comprises:

an upper sub;

a holding device connected to the upper sub which holds the acoustic wave generator in contact with the upper sub;

a lower sub in contact with the holding device; and

an outer sleeve mechanically connected to the lower sub, wherein the upper sub, the holding device and the lower sub are positioned within the outer sleeve,

wherein relative movement of the outer sleeve and the upper sub compresses the acoustic wave generator between the upper and lower subs.

11. (Original) A gauge as claimed in claim 1, wherein the signal controller comprises a microprocessor, an analog to digital converter, and an acoustic generator drive.

12. (Original) A gauge as claimed in claim 1, further comprising a sensor in communication with the signal controller.

13. (Original) A gauge as claimed in claim 12, wherein said sensor monitors a parameter selected from the group of parameters consisting of chemical energy, mechanical energy, electrical energy, heat energy, pressure, temperature, fluid flow, fluid type, resistivity, cross-well acoustics, cross-well seismic, perforation depth, fluid characteristics, logging data, and vibration.

14. (Original) A gauge as claimed in claim 12, wherein said sensor comprises a sensor selected from the group of sensors consisting of magneto-resistive sensors, piezoelectric sensors, quartz sensors, fiberoptic sensors, and sensors fabricated from silicon on sapphire.

15. (Original) A gauge as claimed in claim 1, further comprising a downhole tool in communication with the signal controller.

16. (Original) A gauge as claimed in claim 12, wherein said downhole tool comprises a tool selected from a group of tools consisting of a valve, a pump, a hydraulic lift tool, a packer, a cross-over tool, and a motor, a sliding sleeve, a shut off device, a variable choke, a penetrator, a perf valve, and a gas lift tool.

17. (Original) A telemetry system comprising:

a pipe;

a SCADA box acoustically coupled to the pipe; and

a gauge inserted in the pipe, the gauge comprising:

an acoustic wave generator;

a coupler mechanically connected to the acoustic wave generator, wherein the coupler is engageable and disengageable with the pipe, wherein the coupler defines an acoustic transmission path between the acoustic wave generator and the pipe when engaged with the pipe; and

a signal controller in communication with the acoustic wave generator.

18. (Original) A telemetry system as claimed in claim 17, wherein the acoustic wave generator comprises a piezoelectric crystal.

19. (Original) A telemetry system as claimed in claim 17, wherein the coupler comprises:

an upper sub;

a holding device connected to the upper sub which holds the acoustic wave generator in contact with the upper sub;

a lower sub in contact with the holding device; and

an outer sleeve mechanically connected to the lower sub, wherein the upper sub, the holding device and the lower sub are positioned within the outer sleeve, wherein relative movement of the outer sleeve and the upper sub compresses the acoustic wave generator between the upper and lower subs.

20. (Original) A method for communicating information in a wellbore from a downhole location to the surface, the method comprising:

running a downhole gauge into a pipe within the wellbore, wherein the downhole gauge comprise an acoustic wave generator;

setting the downhole gauge in the pipe; and

communicating an acoustic signal between the downhole gauge and the pipe.

21. (Original) A method as claimed in claim 20, wherein the setting comprises:

engaging at least one sets of slips with the pipe; and

compressing the acoustic wave generator between the at least one sets of slips.

22. (Original) A method as claimed in claim 20, wherein the setting comprises establishing an acoustic transmission path between the acoustic wave generator and the pipe.

23. (Original) A method as claimed in claim 20, wherein the communicating an acoustic signal between the downhole gauge and the pipe comprises transmitting a signal representing a parameter selected from the group of parameters consisting of chemical energy, mechanical energy, electrical energy, heat energy, pressure, temperature, fluid flow, fluid type, resistivity, cross-well acoustics, cross-well seismic, perforation depth, fluid characteristics, logging data, and vibration.

24. (Original) A method as claimed in claim 20, further comprising communicating an acoustic signal between the pipe and a SCADA box.

25. (Original) A method as claimed in claim 24, wherein the communicating an acoustic signal between the pipe and a SCADA box comprises transmitting a control signal for a downhole tool selected from the group of downhole tools consisting of a valve, a pump, a hydraulic lift tool, a packer, a cross-over tool, and a motor.

26. (Original) A method as claimed in claim 20, further comprising controlling a downhole tool with the downhole gauge.

27. (Original) A method as claimed in claim 26, wherein said downhole tool comprises a tool selected from a group of tools of a valve, a pump, a hydraulic lift tool, a packer, a cross-over tool, and a motor, a sliding sleeve, a shut off device, a variable choke, a penetrator, a perf valve, and a gas lift tool.